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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,801	10/22/2003	Stuart S. Goldstein	P2002J095 (US2)	5620

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ExxonMobil Research and Engineering Company
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EXAMINER

SINGH, PREM C

ART UNIT	PAPER NUMBER
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1764

MAIL DATE	DELIVERY MODE
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06/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/690,801	Applicant(s) GOLDSTEIN ET AL.	
	Examiner Prem C. Singh	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-8 and 10-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8 and 10-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/02/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/02/2006 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-8, and 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Golem et al. ("Conversion of Fixed-Bed Reformers to UOP CCR Platforming Technology") in view of Dufresne et al. (US 5,854,162).

The Golem reference discloses a process in which a fixed-bed catalytic reformer unit is revamped so that at least one of the fixed-bed reactors is converted to a moving-bed reactor. All fixed-bed reactors may be converted to moving bed reactors. The moving bed reactor requires catalyst feeding and recovery facilities. A catalyst regenerator is also added to the unit. By performing this revamping, the resulting product from the reactor has improved quality and yield as compared to the product from the fixed-bed unit. The revamped unit is operated at lower pressures (i.e., 100 psi vs. 300 psi or 690 kPa vs. 2068 kPa).

Art Unit: 1764

The catalyst used in the process contains platinum on a support. The catalyst is believed to be the same as claimed. The revamp in the manner disclosed by Golem is believed to result in a unit that is operated as claimed. See the entire document, especially pages 2, 5, 6, 7, 8, 10, and figure 9.

The Golem reference does not disclose a catalyst regeneration facility that is not integrated with the reactor from which the catalyst is removed.

The Dufresne reference discloses a reforming process in which the catalyst is regenerated offsite. See column 3, lines 31-44 and column 4, lines 16-37.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of the Golem reference by using an offsite regenerator as suggested by Dufresne because this would allow better control of the two principle regeneration steps.

Regarding the pressure conditions, the revamping as disclosed by Golem results in lower pressures used in the process. The actual pressures used would be based on the desired composition of the product and one having ordinary skill in the art would adjust such pressures accordingly.

Response to Arguments

The Applicant argues These unit "conversion" options, as set out in claims 1, 18 and 20 are not described or taught by Golem and this much is acknowledged by the Examiner in the first full paragraph on page 4 of the Office Action although in the preceding paragraph, the Examiner states that "[t]he revamp in the manner proposed by Golem is believed to result in a unit that is operated as claimed. Applicants' position is that the three different types of revamp described by Golem do not result in a unit which operates in the manner claimed: Golem does not disclose an operation in which the catalyst is regenerated in a non-integrated regenerator, as is required by all the current claims. As previously pointed out, Golem only deals with unit conversion options in which an integrated moving bed regenerator of some size, small or large, is installed and used in combination with the moving bed reactor(s). For this reason, the Golem reference cannot with justice be applied to the present claims at all since they deal with a different type of conversion scheme. The conclusion of obviousness is therefore faulted from the outset.

The Applicant's argument is not persuasive because Golem discloses, "If the revamp is the first step in a phased approach toward full CCR (continuous catalyst regeneration) platforming operations, the CCR regenerator is sized for use with the last moving bed reactor and a future reactor stack, which replaces the side-by-side reactors, or with a future reactor stack, that replaces the entire reactor train." (Page 7, paragraph 6). It is also to be noted that Figures 9-11 of

Art Unit: 1764

Golem clearly show regenerator unit separate from the reactor train. This regenerator can be operated as a non-integrated regeneration facility or as a shared regenerator.

The Applicant argues that Dufresne does not contemplate, therefore, that the described regeneration process is to be used as the normal, regularly used, catalyst regeneration technique, either with the continuous type process or, for that matter, the Golem hybrid type process (see Dufresne column 2, lines 34-39). From this it follows that in a continuous catalytic reforming process such as CCR Platforming TM, the Dufresne reference contemplates that the catalyst will be regenerated in the conventional dedicated, integrated regenerator in normal day-to-day operation. There is no suggestion in Dufresne that the catalyst should be transferred during normal continuous operation to a non-integrated regeneration facility, as required in claims 1, 18 and 20.

The Applicant's argument is not persuasive because Dufresne discloses, " The regeneration process of this invention is carried out offsite, i.e., carried out outside a hydrocarbon treatment unit, preferably a catalytic reforming unit, and more generally away from the refinery site. The catalyst is removed from the reaction zone in the refinery then regenerated before its return to these zones." (Column 4, lines 32-37).

The Applicant argues that Dufresne does not disclose a method of operation in which the non-integrated regeneration is carried out as the normal,

Art Unit: 1764

full-time regeneration method using operating pressure lower than those used in the unit prior to the conversion. The present claims are therefore to be understood as bearing on the manner of the conversion, with reference both to the condition of the unit and its manner of operation before conversion as well as after the conversion. There is nothing in Dufresne which suggests that it would be desirable to use the technique in combination with a moving bed reactor train without its conventionally-associated integrated regenerator following removal of the fixed bed reactors and their replacement by moving bed reactors. Second, there is nothing in Dufresne which suggests the desirability of operating the unit after conversion at a pressure which is lower than that before conversion. In fact, Dufresne is not relevant to the issue of conversion since it provides no hints at all about conversion; it deals only with the unit as it is at the moment; for this reason, Dufresne is incapable of providing any teaching at all about the pressures which are to be used in the converted unit relative to the pressures used prior to conversion.

The Applicant's argument is not persuasive because Dufresne discloses, "The process of the invention is preferably such that the used catalyst is from a continuous and/or semi-regenerative type reforming process, i.e., a continuous type, semi-regenerative type, or mixed type processes." (Column 4, lines 16-19). Dufresne uses a MEMERT type furnace which is known to those skilled in the art (See column 7, Examples 1 and 2, and column 6, lines 45-47) and discloses temperature, space velocity, and regeneration time for the process but does not

Art Unit: 1764

specify pressure probably, because the pressure is not an important variable or close to ambient (See column 7, Examples 1 and 2).

The Applicant argues that Golem does not, as pointed out above, disclose revamps of the kind now claimed in which each and every fixed bed reactor is removed and replaced in total by the moving bed sequence: Golem only discloses the addition of a moving bed reactor to a fixed bed train (Hybrid CCR) or complete conversion to full CCR (first or second generation) with a fully integrated regenerator.

The Applicant's argument is not persuasive because Golem discloses, "Replacement of the existing side-by-side reactor train with a modern, moving bed stacked reactor system." (Page 13, paragraph 1).

The Applicant argues about figures 9-11 of Golem as not convincing under 35 USC 103 (See Applicant's Arguments, paragraph 13 bridging pages 11 and 12). The Applicant further argues that here, even were the capability to exist, this is not to be equated with a teaching of the actual desirability of that mode of use absent some other recognized teaching indicating that persons in the art would have recognized that the capability should be given actual effect. Here there is no evidence of record which shows that an appropriately skilled person would have considered it desirable to use the fully integrated regenerators of Golem Figures 9-11 as non-integrated regenerators for another reformer unit. The test of obviousness under 35 USC 103 is desirability not mere possibility; the possibility

Art Unit: 1764

of use as a non-integrated regenerator does not support the examiner's conclusion of obviousness.

The Applicant's argument is not persuasive because Dufresne discloses numerous advantages of regenerating the reforming catalyst off-site (See column 2, lines 39-42; column 3, lines 30-35; column 4, lines 25-37). Dufresne teachings give enough motive to one skilled in the art to use Golem regenerators (Figures 9-11) as non-integrated.

The Applicant argues that certainly, there is nothing in Dufresne's description which discloses or suggests anything other than, with reference to moving bed (CCR) units, occasional departures from conventional integrated regeneration in the event of a unit upset to deal with a catalyst with abnormal characteristics making it unsuitable for normal regeneration (column 2, lines 44-59).

The Applicant's argument is not persuasive because Dufresne clearly discloses, "The aim of the invention is to provide offsite regeneration for used reforming catalysts which produce technical results which are at least as good and normally better than conventional onsite regeneration processes for catalytic reforming catalysts which are currently in use." (Column 3, lines 30-35). Thus, Dufresne invention applies not only to "occasional departures from conventional integrated regeneration in the event of a unit upset" but also for normal regeneration.

The Applicant argues (Paragraphs 15-18) about the pressure ranges with reference to claims 8, 11, and 19.

Claim 8 requires pressure in the range of 1035 to 3800 kPag for the fixed bed reactor and 1035 to 2620 kPag for the moving bed reactor; claim 11 requires moving bed reactor at 20 to 60% lower than the pressure in the fixed bed reactor; and claim 19 requires moving bed reactor to operate at 1035 to 2415 kPag and lower than the fixed bed reactor pressures. Golem discloses for three different cases (hybrid CCR, full CCR, new CCR) typical pressures of 171, 100, and 50 psig (1179, 689, and 345 kPag) respectively (See page 14, paragraph 1) which are lower than the original fixed bed pressure of 265 psig (1827 kPag) (See page 9, last paragraph). The examiner acknowledges that 1179 kPag is the pressure in the moving bed reactor for hybrid CCR process and the pressure in the fully revamped unit is lower than that claimed by the Applicant. However, it is to be noted that for a full CCR unit Golem mentions, "The modifications required to accomplish this conversion are: "..... A net gas recontact section including vessels, exchangers, pumps, and new net gas compressors. This addition was required because of the low operating pressure achieved." (Page 13, paragraph 5).

The Applicant argues that in any event neither Golem nor Dufresne have any disclosure relating to shared regenerator as claimed in claim 20.

The Applicant's argument is not persuasive because Golem shows in figures 10 and 11 the arrangement where regenerator is supplying the

Art Unit: 1764

regenerated catalyst to the reforming unit. As per Dufresne, the catalyst should be regenerated offsite. In other words, the spent catalyst from the last reactor train should be transported to the regenerator by external transport means and not by the lift line shown in figures 10 and 11. Thus, the combined teachings of Golem and Dufresne fully disclose the shared regenerator as claimed by the Applicant.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 7:00 AM-3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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